Mainstreaming GREEN ECONOMY in Setiu Wetland, Terengganu, Malaysia

TZR Technology Sdn Bhd
Setiu Wetland: model for - Mainstreaming “GREEN ECONOMY” in Terengganu, Malaysia

Setiu is a district 40 km north of Kuala Terengganu, capital state of Terengganu

Setiu Wetland – poised to become the focus area for Terengganu’s first planned “GREEN ECONOMY” implementation
Setiu Wetland: model for - Mainstreaming “GREEN ECONOMY” in Terengganu, Malaysia

Setiu Wetland is an **area of high biodiversity**. Research concluded that **29 species of mammals, 161 species of birds and 36 species of reptiles and amphibians** are found in the wetland.

**Replicating** Setiu Model to other areas in Malaysia and the Region

The **largest natural wetland** in the East Coast of Peninsular Malaysia

Develop Setiu as a model for **“GREEN ECONOMY”** with emphasis on **harmoniously balanced** Societal Development, Economic Activities, Sustainable Livelihood Programs & Natural Environment.

Develop **“Centre of Excellence”** supported by **“Earth Observation System”** to better manage biodiversity & digital earth index in Setiu Wetland.

The largest natural wetland in the East Coast of Peninsular Malaysia

TZR TECHNOLOGY SDN BHD
BUSINESS IN EARTH OBSERVATION TECHNOLOGY
Propose Scope of Work for Setiu Wetland Livelihood Program

• Livelihood Program for Setiu Lagoon – Farm Fishing
  • Develop fish farming as sustainable incoming generating activity
  • Rehabilitation of farm fishing area in the lagoon
    • Rehabilitate sand dune protecting the lagoon
    • Deeping of the lagoon area
  • Increase involvement of more local communities in fish farming activities
    • Enhance related support infrastructure related to fish farming
  • Takeover the operation of MOA Hatchery in Pengkalan Gelap
  • Rehabilitation of Sungai Ular
  • Conduct detail technical study for conservation & rehabilitation program for fish farming activities
Propose Scope of Work for Setiu Wetland Livelihood Program

• Livelihood Program for Setiu Lagoon – eco-Tourism
  • Development of a more structured & more planned eco-tourism program
  • Customizing tourism program to bring in “high yield” Japanese tourists
  • Develop appropriate tourism trails in Setiu Wetland
Propose Scope of Work for Setiu Wetland Livelihood Program

- **Conservation & Rehabilitation** of “Setiu Wetland”
  - Development of mangrove & nipah seedling nursery
  - Rehabilitation of Setiu Wetland
    - **Replantation** of mangrove & nipah seedling
    - **Deepening** of streams & tributaries
  - **Rehabilitation** of Tasik Berombak
  - Develop detail technical study for conservation & rehabilitation program for Setiu Wetland Biodiversity
Propose Scope of Work for Setiu Wetland Livelihood Program

• Deployment of **new technologies & solutions** in GREEN ECONOMY
  • Development of Setiu Wetland Integrated **Community Portal**
  • Design & operate **Internet of Things** (IOT) sensors, web-cameras, etc to improve management & operation Setiu Wetland

• Conduct detail & comprehensive **Green Economy-based R&D** for sustainable Setiu Wetland
These are direct job creation for local communities with the implementation of the livelihood program. There will certainly be many more spill-over jobs be created once the project becomes operational.
Challenges for Setiu Wetland “GREEN ECONOMY”

• Challenges
  • **Acceptance (buy-ins)** of Green Economy as a new & sustainable economic activity by all stakeholders (Federal/state Government, local communities, etc.)
    • Most current implementations are “gimmick-centric” activities with minimal &/or no follow through action plan
  • **Outdated or inaccurate data/information** of current resources
  • **Unavailability of “life size” successful model** to prove “Green Economy” is sustainable
    • Establishing a sustainable model that is benchmarked with “world standard”
  • Planning & implementation are **executed in isolation** by different parties
  • Establishment of **international collaboration, association & partnership** to collectively develop similar model
    • Pooling of world resources to address unique challenges within/between respective communities
Challenges for Setiu Wetland “GREEN ECONOMY”

Land use Update for Setiu Wetland

<table>
<thead>
<tr>
<th>Land use</th>
<th>1990</th>
<th>2000</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest</td>
<td>30,751</td>
<td>26,180</td>
<td>24,802</td>
</tr>
<tr>
<td>Agriculture</td>
<td>29,642</td>
<td>35,710</td>
<td>35,710</td>
</tr>
<tr>
<td>Populated Area</td>
<td>648</td>
<td>1,276</td>
<td>1,384</td>
</tr>
<tr>
<td>Wetland</td>
<td>32,154</td>
<td>30,029</td>
<td>28,624</td>
</tr>
</tbody>
</table>

Wetland area depletion
3,430 hectare between 1990 to 2015
Challenges for Setiu Wetland “GREEN ECONOMY”

Biodiversity Index (Wildlife) within Setiu Wetland

**Green Turtle / Chelonia Mydas** | **Black Hornbill** (Anthracoceros malayanus) | **Setiu Wetland has spotted 160 bird species including 16 internationally endangered**

---

**Endangered Species spotted in Telaga Papan at Gelam Swamp**

*Lesser Adjutant (Leptoptilos javanicus)*

**The World's Most 25 Endangered Freshwater Turtles and Tortoises**

Two Great Endangered Terrapin (River Terrapin, Sea Terrapin) among last Ecology in Setiu Wetland

---

TZR TECHNOLOGY SDN BHD
BUSINESS IN EARTH OBSERVATION TECHNOLOGY
Problem Solving

• Problem Solving
  • Create “Mainstreaming Green Economy for Setiu Wetland” as the anchor program to centre-staged environmental awareness
  • Improve awareness & education
    • Establishing closer cooperation with federal/state government & their agencies
    • Continuously creating awareness & education programs for all stakeholders (local community, etc..)
  • Seek global &/or regional support for the implementation of the program above
    • Leverage IPSI & IPSI members
## Proposed Implementation Plan

### 5-year Development Program for Setiu Wetland

<table>
<thead>
<tr>
<th>Year</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project kick-off</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Update Setiu Wetland Biodiversity &amp; Digital Earth Indices</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop detail technical &amp; financial plan for Setiu Wetland Green Economy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Carry out DEI Audit</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conduct extensive &amp; continuous R&amp;D initiatives that will enhance &amp; support Green Economy Program</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Launch “Spectral Resolution Industries (SPI)”</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plan &amp; Design “Earth Observation System”</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Carry out DEI Audit</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operationalization of EOS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Execution of planned rehabilitation & conservation programs for Setiu Wetland that will have direct impact to the Livelihood Program
- Implementation of Fish Farming Livelihood Program
- Implementation of eco-Tourism Livelihood Program
Next Step ..

- Establish Setiu Wetland as World Heritage Site for Wetland Conservation or other protection program to ascertain its existence for generations to come
- Establish Setiu Wetland as Malaysia National Green Economy & “CARBON SINK” reference centre
- Develop & implement specific programs to
  - Reintroduce &/or rehabilitate natural habitats for wetland wildlife (eg sea terrapin, green turtle, birds, crustaceans, etc)
  - Replant mangrove & nipah trees at the rate of 50-80 hectares per month
  - Replant sea grass
  - Rehabilitate Tasek Berombak (natural lake) & the rivers in Setiu back to the natural original condition
thank you